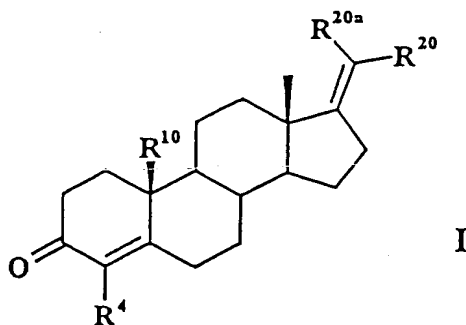


This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A 17-Methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

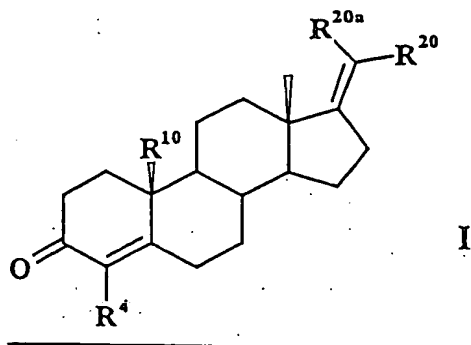
R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen,

wherein, when R^{10} is methyl and R^{20} and R^{20a} are both hydrogen, R^4 is not chlorine.

Claim 2 (previously amended): A 17-Methylene steroids according to claim 1, wherein R^4 is a chlorine or bromine atom or a cyano group.

Claim 3 (currently amended): ~~A17-Methylene steroid according to claim 1, wherein~~ A 17-Methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

one of radicals R^{20} and R^{20a} is a hydrogen atom or a methyl group, and the other radical is a fluorine, chlorine or bromine atom, an azido, cyano or rhodano group or hydroxymethyl.

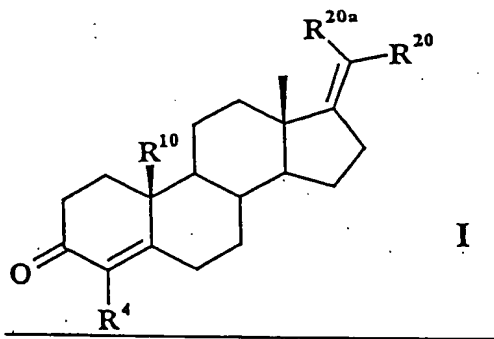
Claim 4 (previously amended): A17-Methylene steroids according to claim 1, wherein R^{10} is a hydrogen atom or a methyl group.

Claim 5 (currently amended): A17-Methylene steroid ~~according to claim 1,~~ selected from the group consisting of

- 1) E-17-Chloromethylene-4-chloro-estr-4-en-3-one,
- 2) E-17-Cyanomethylene-4-chloro-estr-4-en-3-one,
- 3) Z-17-Cyanomethylene-4-chloro-estr-4-en-3-one,

- 4) Z-17-(1')-Cyanoethylidene-4-chloro-estr-4-en-3-one,
 5) Z-17-Ethylidene-4-chloro-estr-4-en-3-one,
 6) E-17-Ethylidene-4-chloro-estr-4-en-3-one,
 7) E-17-Bromomethylene-4-chloro-estr-4-en-3-one,
 8) Z-17-Chloroethylidene-4-chloro-estr-4-en-3-one,
 9) Z-17-Bromoethylidene-4-chloro-estr-4-en-3-one,
 10) E-17-Chloromethylene-4-cyano-androst-4-en-3-one,
 11) E-17-Chloromethylene-4-chloro-androst-4-en-3-one,
 12) E-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one, and
 13) Z-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one.

Claim 6 (currently amended): A process for preparing a 17-methylene steroid ~~according to claim 1,~~ wherein of formula I

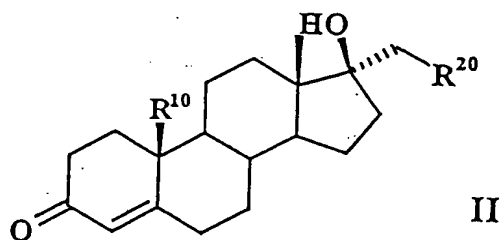


in which

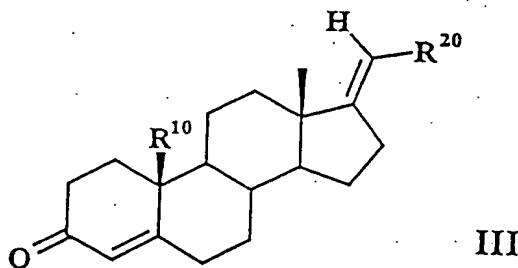
R⁴ is a halogen atom or a pseudohalogen,

R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

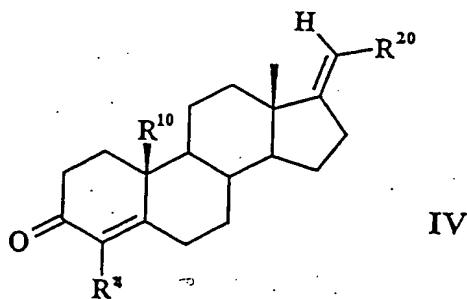
R^{20} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or a halogen atom or a pseudohalogen, and R^{20a} is a hydrogen atom, comprising reacting a compound of formula II,



in an aprotic solvent with an acid chloride to form a 17-methylene steroid of formula III,



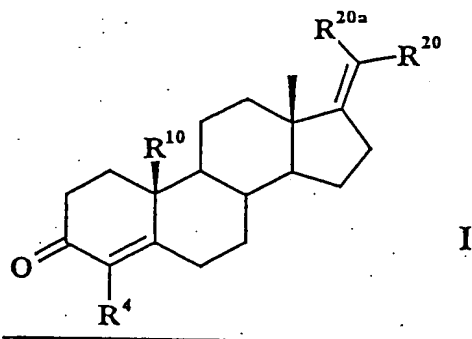
the 4,5-epoxide is generated with $H_2O_2/NaOH$, the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula IV,



wherein R^4 is a halogen atom or pseudohalogen, R^{10} is a hydrogen atom or a straight-chain or branched C_{1-4} alkyl group,

and R^{20} is a C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, a halogen atom or a pseudohalogen.

C1
Claim 7 (currently amended): A process for preparing a 17-methylene steroid ~~according to claim 1,~~ of formula I



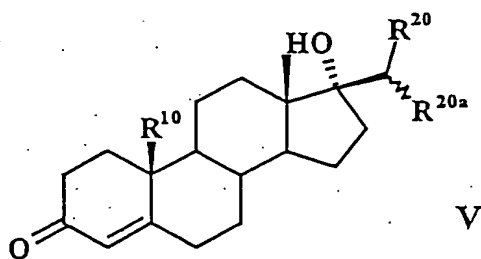
in which

R^4 is a halogen atom or a pseudohalogen,

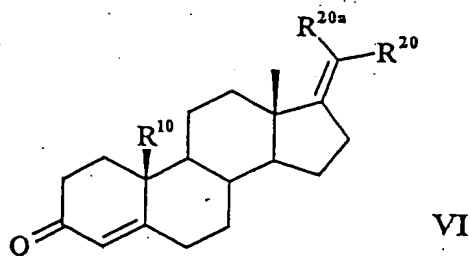
R^{10} is a hydrogen atom or a straight-chain or branched C_{1-4} alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

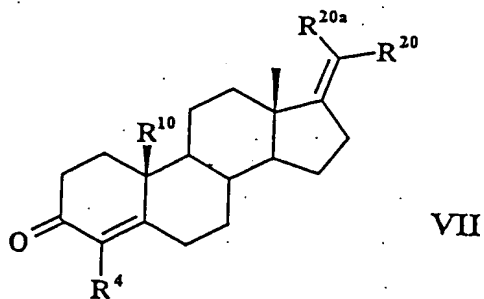
one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen, comprising reacting a compound of formula V,



with an acid chloride in an aprotic solvent to form a methylene steroid of formula VI,



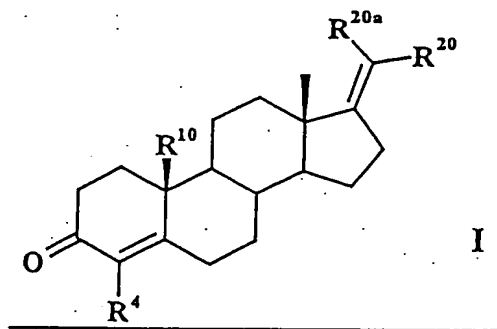
the 4,5-epoxide is generated with $H_2O_2/NaOH$, the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula VII,



in which R^4 is a halogen atom or pseudohalogen, R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

and R^{20} is a C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and R^{20a} is a hydrogen atom, a halogen atom or a pseudohalogen.

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Claim 8 (currently amended): A pharmaceutical composition comprising at least one 17-methylene steroid ~~according to claim 1~~ of formula I



in which

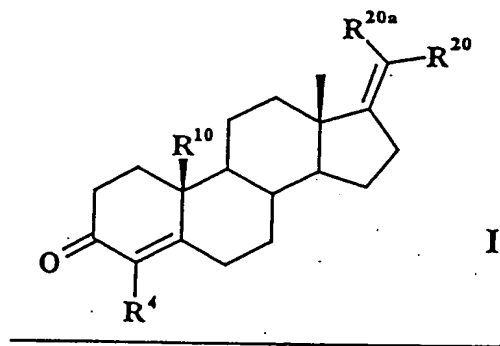
R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R²⁰ and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or
one of radicals R²⁰ and R^{20a} is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, and the other radical is a halogen atom or a pseudohalogen,
 and a pharmaceutically compatible adjuvant or vehicle.

Claim 9 (previously cancelled).

Claim 10 (currently amended): A method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound ~~according to claim 1~~ of formula I

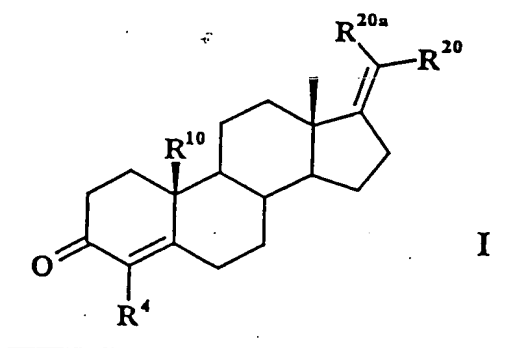


in which

R⁴ is a halogen atom or a pseudohalogen,
R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,
R²⁰ and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 11 (currently amended): A method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 1 of formula I



in which

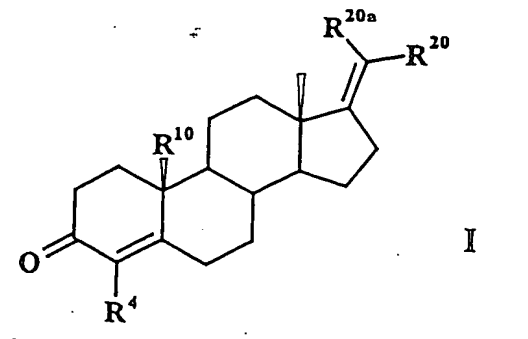
R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 12 (currently amended): A method inhibiting 5 α -reductase comprising administering to a patient in need thereof an effective amount of a compound ~~according to claim 1~~ of formula I



in which

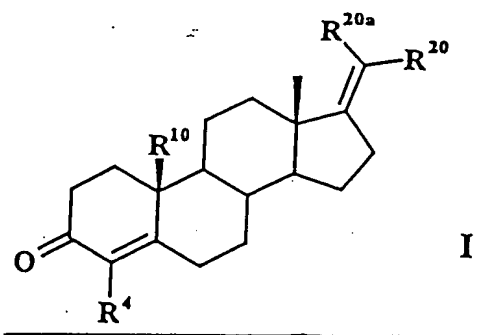
R⁴ is a halogen atom or a pseudohalogen,

R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

R²⁰ and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or

one of radicals R²⁰ and R^{20a} is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 13 (currently amended): A 17-Methylene steroid ~~according to claim 1~~, wherein R⁴ is a halogen atom of formula I



in which

R⁴ is a halogen atom,

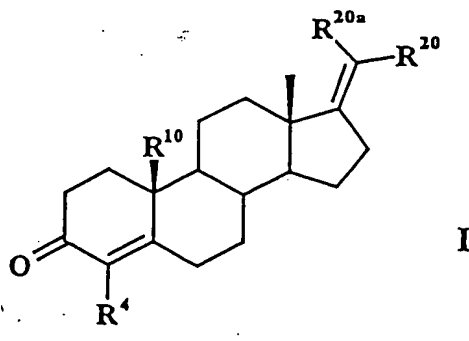
R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

R²⁰ and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or

one of radicals R²⁰ and R^{20a} is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 14 (currently amended): A 17-Methylene steroid according to claim 1, wherein of formula

I



in which

R⁴ is an azido, rhodano or cyano group,

R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

R²⁰ and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or

one of radicals R²⁰ and R^{20a} is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, and the other radical is a halogen atom or a pseudohalogen.

C1
Claim 15 (new): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 1 and a pharmaceutically compatible adjuvant or vehicle. NM

(1)
Claim 16 (new): A method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.

(1)
Claim 17 (new): A method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.

(1)
Claim 18 (new): A method inhibiting 5 α -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.

(1)
Claim 19 (new): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 5 and a pharmaceutically compatible adjuvant or vehicle.

Claim 20 (new): A method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound according to claim 5.

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Claim 21 (new): A method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 5.

✓
(17)

C1 Claim 22 (new): A method inhibiting 5 α -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 5.

✓
(17)

Claim 23 (new): A 17-Methylene steroid according to claim 1, wherein R⁴ is a halogen atom.

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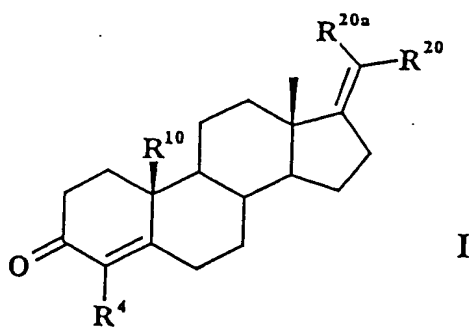
Claim 24 (new): A 17-Methylene steroid according to claim 1, wherein R⁴ is an azido, rhodano or cyano group.

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Claim 25 (new): A 17-Methylene steroid according to claim 1, wherein R⁴ is a cyano group.

-
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Claim 26 (new): A 17-Methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

one of R^{20} or R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other of

R^{20} or R^{20a} is a straight-chain or branched C_{1-4} alkyl, a hydroxy- C_{1-4} alkyl group, a halogen atom or a pseudohalogen.